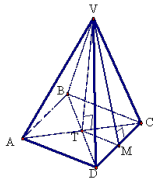
9.3 and 9.5

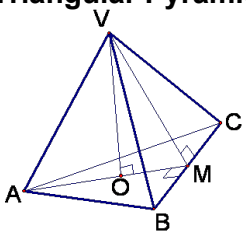
Area and Volume of Pyramids

The **base** of a pyramid is a polygon.
The **lateral faces** are triangles

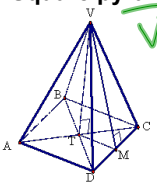
Square pyramid



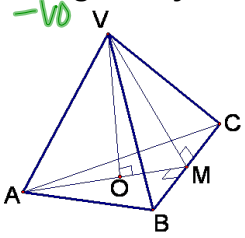
Triangular Pyramid



Square pyramid VT - height VD



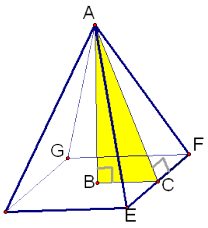
Triangular Pyramid



The **height** of the pyramid is the perpendicular distance between the vertex and the base. VT VO

The **slant height** of the pyramid, represented by the letter *l*, is the height of one of the lateral faces (triangles). (Isosceles on a regular pyramid.) ℓ VM

The **lateral edges** connect the main vertex and the vertices of the base. VA VC VD VB



Please answer the following questions:

1. Square What shape is the base?
2. AD, AG, AF, AE Name the lateral edges.
3. AB Name the height (altitude).
4. Δs What shape are the lateral faces?
5. ΔADE, ΔAEF, ΔAFG, ΔAGE Name all 4 lateral faces.
6. AC Name the slant height.
7. GD, EF, DE, GF Name the base edges.
8. Right What kind of triangle is ΔABC?
9. DE = $\frac{1}{2}$ x BC
10. Fill in the Pythagorean Theorem for ΔABC. AC^2 = AB^2 + BC^2

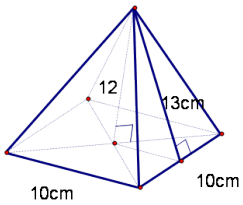
$c^2 = a^2 + b^2$

LA = ½ p l

SA = LA + B

V = $\frac{1}{3}$Bh

Example 1:



h = 12cm

l = 13cm

p = $4 \cdot 10 = 40cm$

B = $10^2 = 100cm^2$

LA = $\frac{1}{2} pl = \frac{1}{2} 40 \cdot 13 = 260cm^2$

SA = $260 + 100 = 360cm^2$

V = $\frac{1}{3} 100 \cdot 12 = 400cm^3$

$100 \times 12 \div 3$

Example 2:

h = 2cm

l = 2.5cm

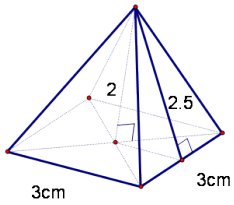
p = $4 \cdot 3 = 12cm$

B = $3^2 = 9cm^2$

LA = $\frac{1}{2} 12 \cdot 2.5 = 15cm^2$

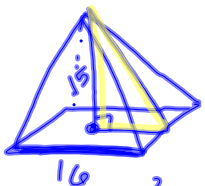
SA = $15 + 9 = 24cm^2$

V = $\frac{1}{3} 9 \cdot 2 = 6cm^3$



#3

$l = 17$



$l^2 = 8^2 + 15^2$

$l^2 = 64 + 225$

$\sqrt{l^2} = \sqrt{289}$

$l = 17$